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09/529,269	04/10/2000	Kensaku Abe	6640/59442	1633

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EXAMINER	
LAO, LUN S	
ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/529,269	ABE ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 August 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This action responds to the amendment filed on 08-25-2004. Claims 1 and 5-11 have been amended and claims 2 and 12-15 have been cancelled. Claims 1 and 3-11 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3,5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrea (US PAT. 5,251,263) in view of Usami (US PAT. 4,088,849).

Consider claim 1, Andrea teaches an acoustic apparatus comprising:

a headphone section mounted on a user head (see fig. 10),

having first and second headphone boxes arranged respectively on the ears of the user and having first and second microphone elements (60', 70') mounted respectively on the first and second headphone boxes for detecting sound around the user and signal acoustic transducing elements (50) mounted respectively in the first and second headphone boxes functioning as sound sources (see fig.10), with first output terminals

for outputting microphone audio signals (60', 70') collected by the first and second microphone elements and first input terminals for inputting audio signals supplied to the first and second signal acoustic transducing elements (50) (see col.3 line 25-col.4 line 55); and

a control circuit section (see fig.11, 100) separate and independent from the headphone section and have second input terminal connected (see fig.11, 140) to the first output terminal (see fig.10, 60") and a second output terminals connected (see fig.11, 140) to the first input terminals (see fig.10, 60") for controlling at least frequency characteristics and inherently gain characteristics of the microphone audio signals from the first and second microphone elements of the headphone section input through the second input terminals (see fig.11, 140), for generating a cancel audio signals for canceling effects of the sound around the user in the signals fed to the first and second signal acoustic transducing elements, and for supplying the cancel audio signal to the first and second signal acoustic transducing elements (50) of the headphone section (see fig.10, 60") through the second output terminals (see fig.11,140 and col.5 line 25-col.6 line 60); whereby ambient sound around the user is cancelled in a range of 50 Hz to 1.5 kHz (ANC unit cancels noise ranging from 0 to 4 kHz which includes the range of 50 Hz to 1.5 KHz, see col. 9, lines 15-32); but Andrea does not clearly teach the control circuit section further including recording means for recording the microphone audio signals output from the first and second microphone elements as binaural audio signals.

However, Usami teaches the control circuit (see figs. 1-4) section further including recording means (see col.3 lines 48-61) for recording the microphone audio signals output from the first and second microphone elements as binaural audio signals (see col.2 lines 21-32).

Therefore, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the teaching of Usami and Andrea to provide a headphone which comprises a pair of units each comprising a microphone to pick up sound and a loudspeaker acoustically isolated from the microphone to monitor the picked up sound or reproduce pre-recorded sound signals.

Consider claim 3, Andrea teaches the control circuit section further comprises: means for inherently adding different audio signals (see fig.10 (60', 70') from feedback sensors) cancellation to the cancel audio signal using a signal audio converter element (see (see fig.10, (50) and col.5 line 25-col.6 line 45).

Consider claim 5, Andrea teaches an acoustic apparatus comprising:
a headphone section (see fig.10) mounted on a user's head, having first and second headphone boxes arranged respectively on the ears of the user, first and second microphone elements (60', 70') mounted on the first and second headphone boxes for detecting sound around the user, first and second signal acoustic transducing elements (50) arranged in the first and second headphone boxes functioning as sound sources (see fig.10), first output terminals (see fig.10,60") an adjusting section for adjusting outputs of microphone audio signals collected by the first and second microphone elements and first input terminals (see fig.10, 60") for inputting a cancel audio signal

supplied to the first and second signal acoustic transducing elements (see col.6 line 45-col.8 line 30), and

a control circuit section (see fig.11, 100) arranged in a housing separated and independent from the headphone section (see fig. 10) and having a second input terminals connected (see fig.11, 140) to the first output terminals (see fig.10,60") and second output terminals (see fig.11, 140) connected to the first input terminals (see fig.10, 60") for controlling at least frequency characteristics and inherently gain characteristics of the microphone audio signals from the first and second microphone elements (fig.10, (60', 70')) of the headphone section input through the second input terminals (see fig.11,140), for generating the cancel audio signal that can serve as a sound source for canceling effects of the sound around the user, and for supplying the cancel audio signal to the first and second signal acoustic transducing elements (50) of the headphone section through the second output terminals (see col.8 line 35-col.9 line 65), whereby ambient sound around the user is cancelled in a range of 50 Hz to 1.5 kHz (ANC unit cancels noise ranging from 0 to 4 kHz which includes the range of 50 Hz to 1.5 KHz, see col. 9, lines 15-32); but Andrea does not clearly teach the housing also having arranged therein recording means for recording the microphone audio signals output from the first and second microphone elements as binaural signal.

However, Usami teaches the housing (see figs. 1-4) also having arranged therein recording means (see col.3 lines 48-61) for recording the microphone audio signals output from the first and second microphone elements as binaural audio signals (see col.2 lines 21-32).

Therefore, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the teaching of Usami and Andrea to provide a headphone which comprises a pair of units each comprising a microphone to pick up sound and a loudspeaker acoustically isolated from the microphone to monitor the picked up sound or reproduce pre-recorded sound signals.

Consider claim 10, Andrea teaches an acoustic apparatus comprising:

a headphone section mounted on a user head (see fig.10), having a microphone elements (60', 70') mounted on the first and second headphone boxes for detecting sound around the user and first and second signal acoustic transducing element (50) functioning as sound sources (see fig.10), with first output terminals (see fig.10,60") for outputting a microphone audio signals collected by the first and second microphone elements and first input terminals (see fig.10, 60") for inputting a cancel audio signal supplied to the first and second signal acoustic transducing elements (50) (see col.3 line 25-col.4 line 55);

a control circuit section (see fig. 11,100) arranged in a housing separate and independent from the headphone section and having second input terminals connected (see fig.11,140) to the first output terminals (see fig.10, 60") and a second output terminals (see fig.11, 140) connected to the first input terminal (see fig.10, 60") for controlling at least frequency characteristics and inherently gain characteristics of the microphone audio signals from the first and second microphone elements of the headphone section input (see fig.10, 60") through the second input terminals (see fig.11,140), for generating the cancel audio signal for canceling the effects of the

ambient sound around the user within a range of 50 Hz to 1.5 kHz (ANC unit cancels noise ranging from 0 to 4 kHz which includes the range of 50 Hz to 1.5 KHz, see col. 9, lines 15-32), and for supplying the cancel audio signal to the first and second signal acoustic transducing elements (50) of the headphone section through the second output terminals (see col.8 line 35-col.9 line 65); and a circuit (see fig.9) configuration for canceling the surrounding sound used by the control circuit section that is of a feed-forward system (see col.14 line 45-col.15 line 15), but Andrea does not clearly teach a recording/playback device arranged in the housing for recording the microphone audio signals output from the first and second microphone elements as binaural audio signals.

However, Usami teaches a recording/playback device (see col.5 lines 48-61) recording/playback device arranged in the housing for recording the microphone audio signals output from the first and second microphone elements (see figs 1-2) as binaural audio signals (see col.2 lines 21-32 and col.5 lines 48-61).

Therefore, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the teaching of Usami and Andrea to provide a headphone which comprises a pair of units each comprising a microphone to pick up sound and a loudspeaker acoustically isolated from the microphone to monitor the picked up sound or reproduce pre-recorded sound signals.

4. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrea (US PAT. 5,251,263) in view of Ueno (US PAT. 5,341,254) and Usami (US PAT. 4,088,849).

Consider claim 9, Andrea teaches an acoustic apparatus comprising:

a headphone section mounted on a user's head (see fig.10), having first and second headphone boxes arranged respectively on the ears of the user and having first and second microphone elements (70', 60') for detecting sound around the user and first and second signal acoustic transducing elements (50) functioning as sound sources with a first output terminals for outputting microphone audio signals collected by the first and second microphone elements and first input terminals for inputting a cancel audio signal supplied to the first and second signal acoustic transducing elements (50) (see col.3 line 25-col.4 line 55); and

a gain characteristics (see fig.11, 100) of the microphone audio signal from the microphone element of the headphone section input (see fig.10, 60") through the second input terminal (see fig.11,140), with said frequency characteristics and gain characteristics being adjusted to achieve a predetermined level at a predetermined frequency between 50 Hz and 1.5 kHz, to generate the cancel audio signal that can cancel the ambient sound around the user within a range of 50 Hz to 1.5 kHz (ANC unit cancels noise ranging from 0 to 4 kHz which includes the range of 50 Hz to 1.5 KHz, see col. 9, lines 15-32), and supplying the cancel audio signal to the first and second signal acoustic transducing elements of the headphone section through the second output terminals (see col.8 line 35-col.9 line 65), but Andrea does not teach remote controller connected to said recording/playback device for controlling operation of said recording/playback device and feeding the microphone audio signals to the recording/playback device for recording as binaural signals, said remote controller being

separate and independent from the headphone section and including a control section having a second input terminals connected to the first output terminals and second output terminals connected to the first input terminals for controlling at least frequency characteristics.

However, Ueno teaches remote controller (see fig.3, (16) connected to said recording/playback device (14) for controlling operation of said recording/playback device (14) and feeding the microphone audio signal (28,18) to the recording/playback device for recording signals,(14), said remote controller (16) being separated and independent from the headphone section (20) and including a control section (14) having a second input terminals (15) connected to the first output terminals (17, 21) and second output terminals (15) connected to the first input terminals (17, 19) and controlling at least frequency characteristics (see col.3 line 60-col.4 line 50).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Andrea and Ueno to provide an apparatus for switching REC and PB modes of a tape recorder that can be connected to an external earphone or headphone and external microphone to perform recording and reproduction by using one jack as an input/out jack.

On the other hand, Usami teaches feeding the microphone audio signals (see figs. 1-2) to the recording/playback device for recording as binaural signals (see col.2 lines 22-32 and col.3 lines 48-61)

Therefore, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the teaching of Usami and Andrea to provide a

headphone which comprises a pair of units each comprising a microphone to pick up sound and a loudspeaker acoustically isolated from the microphone to monitor the picked up sound or reproduce pre-recorded sound signals.

Consider claim 11, Andrea teaches an acoustic apparatus comprising:

a headphone section (see fig.10) mounted on a user's head, having first and second headphone boxes arranged on respective ears of the user and having first and second microphone elements (6', 70') arranged respectively on the first and second headphone boxes for detecting sound around the user and first and second signal acoustic transducing elements (50) functioning as a sound sources(see col. 9, lines 15-32), housed in first and second headphone boxes, respective, with first output terminals (see fig.10, 60") for outputting microphone audio signals collected by the first and second microphone elements and first input terminals for inputting a cancel audio signal supplied to the first and second signal acoustic transducing elements for canceling effects of ambient sound around the user within a range of 50Hz to 1.5KHz (50) (see col.3 line 25-col.4 line 55 and ANC unit cancels noise ranging from 0-4KHz which includes the range of 50Hz to 1.5KHz, see col.9 lines 15-32), and

a gain characteristics (see fig.11, 100) of the microphone audio signals from the first and second microphone elements of the headphone section (see fig.10, 60") input through the second input terminals (see fig.11, 140), for generating the cancel audio signal for canceling effects of the sound around the user, and supplying the cancel audio signal to the first and second signal acoustic transducing elements (50) of the

headphone section through the second output terminals (see col.8 line 35-col.9 line 65); and

a circuit (see fig.5 and 6) configuration for canceling the effects of the sound surrounding the user used by the control circuit section that is of a feedback system (see col.7 line 5- col.8 line 65), but Andrea does not teach a recording/playback device and a remote controller connected to said recording/playback device for controlling operation of said recording/playback device and feeding the microphone audio signals to the recording/playback device for recording as binaural audio signals, said remote controller being separate and independent from the headphone section and including a control section having second input terminals connected to the first output terminals and a second output terminal connected to the first input terminal for controlling at least frequency characteristics.

However, Ueno teaches a recording/playback device (see fig.3, (14)) and a remote controller (see fig.3, (16) connected to said recording/playback device (14) for controlling operation of said recording/playback device (14) and feeding the microphone audio signals (28,18) to the recording/playback device (14) for recording audio signals, said remote controller (16) being separate and independent from the headphone section (20) and including a control section (14) having second input terminals (15) connected to the first output terminals (17, 21) and second output terminals (15) connected to the first input terminal (17, 19) and controlling at least frequency characteristics (see col.3 line 60-col.4 line 50).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Andrea and Ueno to provide an apparatus for switching REC and PB modes of a tape recorder that can be connected to an external earphone or headphone and external microphone to perform recording and reproduction by using one jack as an input/out jack.

On the other hand, Usami teaches feeding the microphone audio signals (see figs. 1-2) to the recording/playback device for recording as binaural signals (see col.2 lines 22-32 and col.3 lines 48-61)

Therefore, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to combine the teaching of Usami and Andrea to provide a headphone which comprises a pair of units each comprising a microphone to pick up sound and a loudspeaker acoustically isolated from the microphone to monitor the picked up sound or reproduce pre-recorded sound signals.

5. Claims 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrea (US PAT. 5,251,263) as modified by Usami (US PAT. 4,088,849) as applied to claim 1 above, and further in view of Ueno (US PAT. 5,341,254).

Consider claim 4, Andrea teach that the acoustic apparatus of the control circuit section further comprises:

means for inherently adding different audio signals (See fig.10 (60', 70') from feedback sensors) to the cancel audio signal using a signal audio converter element as a sound source (see fig.10, 50 and col.5 line 25-col.6 line 45); but Andrea does not

clearly teach a remote control configured to supply remote-control signals for remotely controlling output of the different audio signals.

However, Ueno teaches a remote control configured (see fig.12, 16)) to supply remote-control signals for remotely controlling output of the different audio signals (see fig.3 (18,20,28) and col.3 line 60-col.4 line 50).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Ueno into the teaching of Andrea and Usami to achieve a noise reducing device for user easily to use the control system.

6. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrea (US PAT. 5,251,263) as modified by Usami (US PAT. 4,088,849) as applied to claim 5 above, and further in view of Trompler (US PAT. 4,928,311).

Consider claim 6, Andrea as modified fails to teach that the acoustic apparatus of an amplifier section is included in each first and second headphone box behind the adjusting section for amplifying the microphone audio signals from the first and second microphone elements and for adjusting the microphone audio signals from the first and second microphone elements, where gains are controlled by amplifying the microphone audio signals.

However, Tromple teaches that the acoustic apparatus of an amplifier section is included in the headphone box behind the adjusting section (see fig.1 (44)) for amplifying the first and second microphone (40) audio signals from the first and second microphone elements and for adjusting the first and second microphone audio signals

from the first and second microphone elements (40), where gains are controlled by amplifying the microphone audio signals (see col.2 line 35-50).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Trompleri into the teaching of Andrea and Usami to achieve an noise reducing device for reducing the cost and the size of the unit and to be used more widely in cost sensitive and space sensitive environments.

Consider claims 7-8, Trompler teaches that the acoustic apparatus of an amplifier section for generating signals serving as a sound source for canceling the sound around the user and adjusting means (see fig.1, (44)) for adjusting an output level of the amplifier section are provided in each first and second headphone box, and gains of the cancel audio first and second signal input to the signal acoustic transducing elements (36) are controlled (see col.2 line 30-col.3 line 60); and an adjusting section adjusts (see fig.2, (72,76)) the microphone audio signals from the first and second microphone elements that serve as sound sources for canceling the effects of the sound around the user and adjusts the microphone audio signals from the first and second microphone elements in the first and second headphone boxes, said adjusting means (see fig.1,(44)) having operating means (see fig.1,44) operable by the user from outside the first and second headphone boxes, and an amplifier section for amplifying the microphone audio signals adjusted at the adjusting section (see col.2 line 45-col.3 line 65).

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered to applicant's disclosure. Lombardo (US PAT. 4,819,270) and Ohno (EP 0282017) are cited to show other related the audio device and headphone.

10. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER